

**DETAILED ACTION**

Applicants' response filed 12/28/2009 has been entered. Claims 1-4 and 6-8 remain pending.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-4 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 5,732,322) in view of Nakamura et al. (US 5,616,406) and Hirai (US 6,057,393).

**Regarding claim 1**, Nakamura et al. (US '322) discloses a resin composition for sliding member (Abstract, C1/L5-8), comprising 1 to 25% of component A selected from the group consisting of phosphates and barium sulfate (Abstract, C2/L15-24), which overlaps with the

claimed range of 6 to 45%. Nakamura et al. further discloses 1 to 15% magnesium silicate and the balance of a tetrafluoroethylene resin (Abstract, C2/L15-24).

However, Nakamura does not disclose phosphate and barium sulfate together. Nakamura et al. (US '406) teaches phosphate and barium sulfate are blended with the PTFE resin in a sliding resin composition (C3/L55-C4/L4). Nakamura et al. (US '322) and Nakamura et al. (US '406) are analogous art concerned with the same field of endeavor, namely sliding member and resin compositions with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to use both phosphate and barium sulfate of Nakamura et al. (US '322) as taught by Nakamura et al. (US '406), and the motivation to do so would have been as Nakamura et al. (US '406) suggests when the phosphate and barium sulfate are blended with the PTFE resin, the phosphate and barium sulfate exhibit an effect of enhancing the lubricating film-forming property of the PTFE resin to the sliding surface (C3/L55-C4/L4).

However, Nakamura et al. (US '322) does not disclose metal salt of metaphosphoric acid. Hirai teaches metal salts of metaphosphoric acid in resin composition for a sliding member (C4/L1-8). Nakamura et al. (US '322) and Hirai are analogous art concerned with the same field of endeavor, namely resin compositions for sliding members with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the phosphate of Nakamura et al. (US '322) with the metal salts of metaphosphoric acid of Hirai, and the motivation to do so would have been metal salts of secondary phosphates, pyrophosphates, and metaphosphates are equivalent and when blended with PTFE provide further improvement of friction and wear characteristics (C4/L1-12).

Regarding the concentrations of phosphate and barium sulfate of said claim, the specific concentrations of phosphate and barium sulfate is not considered to confer patentability to the claims. As the formation amount of lubricating film is variable that can be modified by adjusting said concentrations of phosphate and barium sulfate, the precise concentrations of phosphate and barium sulfate would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the concentrations of phosphate and barium sulfate to obtain desired formation amount of lubricating film (*In re Boesch*, 617 F .2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

**Regarding claim 2**, Nakamura et al. (US '322) discloses a composition as shown above in claim 1. Nakamura et al. (US '322) further discloses a resin composition comprising either 0.1 to 5% of molybdenum disulfide or 0.1 to 4% graphite (C5/L64-C6/L14), which are both solid lubricants as taught by Nakamura et al. (US '406) (C4/L25-28). Nakamura et al. (US '406) also teaches a resin composition for a sliding member (Abstract, C2/L20-31). The amount of said solid lubricants substantially overlap the claimed range of 0.1 to 2%.

**Regarding claim 3**, Nakamuru et al. (US '322) Nakamura et al. (US '322) does disclose fillers may be added, including molybdenum disulfide, graphite, and carbon black wherein the amounts are no more than 5% by weight (C5/L64-C6/L7).

**Regarding claim 4**, Nakamuru et al. (US '322) does not disclose potassium titanate powder, potassium titanate fibers, wollastonite, alumina, silicon carbide, or iron oxide.

Additionally, Nakamura et al. (US '406) teaches the phosphate and barium sulfate are blended simultaneously with the PTFE resin and wollastonite as the reinforcing fillers at 5 to 30% by weight (C3/L47-54, C3/L55-C4/L4). It would have been obvious to one of ordinary skill in the art at the time of invention to add wollastonite of Nakamura et al. (US '406) in a composition of Nakamura et al. (US '322), and the motivation to do so would have been as Nakamura et al. (US '406) suggests the wollastonite reinforces the resin composition and the effect of forming a lubricating film of the PTFE resin on the surface of the wollastonite in a resin composition during sliding movement of the sliding member, prevents direct contact between the wollastonite and the sliding member (C3/L55-C4/L4).

**Regarding claim 6**, Nakamura et al. discloses a sliding member comprising a steel black plate and a porous sintered metal layer formed on the steel back plate (C6/L18-21), wherein pores and surface of the porous sintered metal layer are respectively filled and coated with the resin composition for sliding member (C7/L10-42).

**Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 5,732,322) in view of Nakamura et al. (US 5,616,406) and Kato et al. (US 5,906,967) and Hirai (US 6,057,393).

**Regarding claim 7**, Nakamura et al. (US '322) discloses a resin composition for sliding member (Abstract, C1/L5-8), comprising 1 to 25% of component A selected from the group consisting of phosphates and barium sulfate (Abstract, C2/L15-24), which substantially overlaps with the claimed range of 6 to 45%. Nakamura et al. further discloses 1 to 15% magnesium silicate and the balance of a tetrafluoroethylene resin (Abstract, C2/L15-24).

However, Nakamura does not disclose phosphate and barium sulfate together. Nakamura et al. (US '406) teaches phosphate and barium sulfate are blended with the PTFE resin in a sliding resin composition (C3/L55-C4/L4). Nakamura et al. (US '322) and Nakamura et al. (US '406) are analogous art concerned with the same field of endeavor, namely sliding member and resin compositions with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to use both phosphate and barium sulfate of Nakamura et al. (US '322) as taught by Nakamura et al. (US '406), and the motivation to do so would have been as Nakamura et al. (US '406) suggests when the phosphate and barium sulfate are blended with the PTFE resin, the phosphate and barium sulfate exhibit an effect of enhancing the lubricating film-forming property of the PTFE resin to the sliding surface (C3/L55-C4/L4).

However, Nakamura et al. (US '322) does not disclose metal salt of metaphosphoric acid. Hirai teaches metal salts of metaphosphoric acid in resin composition for a sliding member (C4/L1-8). Nakamura et al. (US '322) and Hirai are analogous art concerned with the same field of endeavor, namely resin compositions for sliding members with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the phosphate of Nakamura et al. (US '322) with the metal salts of metaphosphoric acid of Hirai, and the motivation to do so would have been metal salts of secondary phosphates, pyrophosphates, and metaphosphates are equivalent and when blended with PTFE provide further improvement of friction and wear characteristics (C4/L1-12).

Regarding the concentrations of phosphate and barium sulfate of said claim, the specific concentrations of phosphate and barium sulfate is not considered to confer patentability to the

claims. As the formation amount of lubricating film is variable that can be modified by adjusting said concentrations of phosphate and barium sulfate, the precise concentrations of phosphate and barium sulfate would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the concentrations of phosphate and barium sulfate to obtain desired formation amount of lubricating film (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

However, Nakamura et al. (US '322) does not disclose low-molecular weight tetrafluoroethylene. Kato et al. further discloses low molecular weight PTFE (C4/L66-C5/L16). Nakamura et al. (US '322) and Kato et al. are analogous art concerned with the same field of endeavor, namely sliding members comprising polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to add the low-molecular weight tetrafluoroethylene of Kato et al. in a composition of Nakamura et al. (US '322), and the motivation to do so would have been to improve melt flow.

Regarding the amount of low-molecular weight tetrafluoroethylene, the specific amount of low-molecular weight tetrafluoroethylene is not considered to confer patentability to the claims. As the viscous flow is variable that can be modified by adjusting said amount of low-molecular weight, the precise amount of low-molecular weight tetrafluoroethylene would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was

made would have optimized, by routine experimentation, the amount of low-molecular weight tetrafluoroethylene to obtain desired melt flow (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

**Regarding claim 8**, Nakamura et al. discloses all the claim limitations as set forth above. Nakamura et al. further discloses a sliding member comprising a steel back plate and a porous sintered metal layer formed on the steel back plate (C6/L18-21), wherein pores and surface of the porous sintered metal layer are respectively filled and coated with the resin composition for sliding member (C7/L10-42).

### ***Response to Arguments***

Applicant's arguments filed 12/28/2009 have been fully considered but they are not persuasive. The following comment(s) apply:

A) The Examiner inadvertently did not add claims 2-4 to the heading under the 35 USC 103(a) rejection over Nakamura et al. (US 5,732,322) in view of Nakamura et al. (US 5,616,406) and Hirai (US 6,057,393). Claims 2-4 have been added to the heading.

B) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning (page 2), it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

C) Applicants' argument that both Nakamura (US '322) and Nakamura (US '406) teach only secondary phosphates and pyrophosphates as the suitable phosphates (page 3) is not persuasive. A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). See MPEP 2123.

D) Applicants' argument that Nakamura (US '322) teaches away from the combination of a phosphate and barium sulfate (page 3) is not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). It is the combination of the references, Nakamura (US '322) in view of Nakamura et al. (US '406) which teach the combination of barium sulfate and phosphate together.

E) In response to applicant's argument that it is not obvious to use and blend the phosphate and barium sulfate simultaneously in Nakamura (US '322) merely by referring to the teachings of Nakamura (US '406) of blending both simultaneously (page 3), the fact that applicant has recognized another advantage which would flow naturally from following the



suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

F) Applicants' argument that only lithium phosphate is used in the five examples in the teachings of Hirai (page 3) is not persuasive. A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). See MPEP 2123.

G) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning (pages 3-4), it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Each of the prior art references are concerned with sliding members comprising polytetrafluoroethylene, therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of each of the references.

H) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a multi-layer sliding member (page 4)) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

I) Applicants' argument that Hirai does not teach the amount of PTFE as in instant claims (page 4) is not persuasive. It is the combined teachings of Nakamura (US '322) in view of Nakamura et al. (US '406) and Hirai which teach the claimed invention. Nakamura (US '322) teaches the claimed amount of polytetrafluoroethylene as shown above in claims 1 and 7.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE M. BUIE-HATCHER whose telephone number is

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(571)270-3879. The examiner can normally be reached on Monday-Thursday with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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